TB Elimination

Targeted Tuberculosis Testing and Interpreting Tuberculin Skin Test Results

Introduction

The Centers for Disease Control and Prevention (CDC) and the U.S. Preventive Services Task Force (USPSTF) recommend testing populations that are at increased risk for tuberculosis (TB) infection. Once TB disease has been ruled out, those who would benefit from treatment of latent TB infection (LTBI) should be offered this option regardless of their age. Treatment adherence and completion are important for those who initiate treatment.

Health care providers should consider several criteria when classifying positive TST reactions.

Table 1: Criteria for Classifying Positive TST Reactions

Positive IGRA result or a TST reaction of 5 or more millimeters of induration is considered positive in
» HIV-infected persons » Recent contacts of a TB case » Persons with fibrotic changes on chest radiograph consistent with old TB » Organ transplant recipients » Persons who are munosuppressed for other reasons (e.g., taking the equivalent of >15 mg/day of prednisone for 1 month or longer, taking TNF-α antagonists)
Positive IGRA result or a TST reaction of 10 or more millimeters of induration is considered positive in
» Recent immigrants (< 5 years) from high-prevalence countries » Injection drug users » Residents and employees of high-risk congregate settings (e.g., correctional facilities, nursing homes, homeless shelters, hospitals, and other health care facilities) » Mycobacteriology laboratory personnel » Children under 4 years of age, or children and adolescents exposed to adults in high-risk categories
Positive IGRA result or a TST Reaction of 15 or more millimeters of induration is considered positive in
» Persons with no known risk factors for TB*

** Although skin testing programs should be conducted only among high-risk groups, certain individuals may require TST for employment or school attendance. An approach independent of risk assessment is not recommended by CDC or the American Thoracic Society.*

Persons at Risk for Developing TB Disease

Generally, persons at high risk for developing TB disease fall into two categories: those who have an increased likelihood of exposure to persons with TB disease, and those with clinical conditions that increase the risk of progression from LTBI to TB disease.

Persons at risk for exposure to persons with TB disease include:

- Close contacts of a person with infectious TB disease[1]
- Persons who have immigrated from areas of the world with high rates of TB[2]
- Residents and employees of high-risk congregate settings (e.g., correctional facilities, homeless shelters, health care facilities)[2,3]

Persons more likely to progress from LTBI to TB disease include:

- Recent converters (those with an increase of 10 mm or more in size of TST reaction within a 2-year period)
- HIV-infected persons
- Young children who have a positive TST result[4]
- Those with a history of prior, untreated TB or fibrotic lesions on chest radiograph
- Injection drug users
- Those receiving TNF-α antagonists for treatment of rheumatoid arthritis or Crohn's disease

Clinical conditions that increase the risk of progression from LTBI to TB disease:

- HIV infection
- Low body weight (>10% below ideal)
- Silicosis
- Diabetes mellitus

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- Chronic renal failure or being on hemodialysis
- Gastrectomy
- Jejunoileal bypass
- Solid organ transplant
- Head and neck cancer

Special Considerations

Questions often arise about the interpretation of TST results in persons with a history of Bacille Calmette-Gurin (BCG) vaccine, HIV infection, and recent contacts to an infectious TB case.

BCG vaccine is currently used in many parts of the world to protect infants and children from severe TB disease, especially TB meningitis. It does not confer lifelong immunity, and its significance in persons receiving the TST causes confusion in the medical and lay community.

- History of BCG vaccine is NOT a contraindication for tuberculin skin testing
- TST reactivity caused by BCG vaccine generally wanes with time
- If more than 5 years have elapsed since administration of BCG vaccine, a positive TST reaction is most likely a result of *M. tuberculosis* infection

Persons who are HIV infected have a much greater risk for progression to TB disease if they have LTBI.

- Individuals with HIV infection may be unable to mount an immune response to the TST and may have false-negative TST results
- Usefulness of anergy testing in TST-negative persons who are HIV infected has not been demonstrated

Persons with a positive TST result who are contacts of an individual with infectious TB should be treated regardless of age.

- Some TST-negative persons should also be considered for treatment (i.e., young children, immunosuppressed)
- Repeat TST in 8-10 weeks if initial test result is negative. A delayed-type hypersensitivity response to tuberculin is detected 2–8 weeks after infection

Testing Guidelines for Populations At Increased Risk for TB Infection

1. NTCA/CDC. Guidelines for the Investigation of Contacts of Persons with Infectious TB. MMWR 2005;54(RR-15). http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5415a1.htm
2. ATS/CDC. Targeted Tuberculin Testing and Treatment of Latent TB Infection. MMWR 2000; 49 (No.RR-6) http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4906a1.htm
3. CDC. Guidelines for Preventing Transmission of TB in Health-Care Settings. MMWR 2005;54(RR-17). http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm
4. AAP. Recommendations for Preventive Pediatric Health Care, 2016. https://www.aap.org/en-us/Documents/periodicity_schedule.pdf

Additional Resources

USPSTF. Latent Tuberculosis Infection: Screening Recommendation. http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryDraft/latent-tuberculosis-infection-screening

Targeted Tuberculosis (TB) Testing and Treatment of Latent TB Infection (slide set). http://www.cdc.gov/tb/publications/slidesets/LTBI/default.htm

ATS/CDC/IDSA. Clinical Practice Guidelines: Treatment of Drug-Susceptible Tuberculosis. Clin Infect Dis. (2016) http://cid.oxfordjournals.org/content/early/2016/07/20/cid.ciw376.full

TB Education and Training Resources website http://www.findtbresources.org/

CDC Division of TB Elimination website http://www.cdc.gov/tb

CDC Division of TB Elimination Treatment Fact Sheets http://www.cdc.gov/tb/publications/factsheets/treatment.htm

http://www.cdc.gov/tb

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